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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/782,390
Filing Date: February 19, 2004
Appellant(s): ZININ, ALEXEY D.

Ross D. Snyder
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed July 25, 2011 appealing from the Office action mailed September 8, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-38 are finally rejected and currently pending

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

20030112755	McDYSAN	6-2003
20020067725	OGUCHI ET AL	6-2002
20020085498	NAKAMICHI ET AL	7-2002
20040010583	YU ET AL	1-2004
5802178	HOLDEN ET AL	9-1998
7336615	PAN ET AL	2-2008
20040085965	FOTEDAR	5-2004
20020023210	TUOMENOKSA ET AL	2-2002
6061330	JOHANSSON	5-2000
20010049744	HUSSEY ET AL	12-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 2, 4, 17, 20, 21, 23, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan (United States Patent Application Publication US 2003/0112755 A1) in view of Oguchi et al (United States Patent Application Publication US 2002/0067725 A1), hereinafter Oguchi.

Regarding Claim 1, McDysan discloses marking packets carrying Layer-3 control information (paragraphs 0037 and 0042, wherein packets are marked with a differentiated services code point (DSCP) value). Examiner notes that DSCP is utilized in Internet Protocol (IP) (see paragraph 0010 of McDysan, which states "Diffserv enables an ingress boundary router to provide the QoS to aggregated flows simply by examining and/or marking each IP packet's header"), which is known in the art as an implementation of "Layer-3" in the OSI 7-layer Interconnect Model (i.e., the network layer). While McDysan discloses using Layer 2 Tunneling Protocol (L2TP) to implement a virtual private network (VPN) tunnel (paragraphs 0046 and 0047) and determination of a trusted CPE (paragraph 0042), McDysan does not disclose encapsulating the packets at Layer-2 to uniquely identify Layer-2 frames as carrying trusted control information. In the same field of endeavor, Oguchi discloses encapsulating an L2TP VPN packet comprising Layer-2 encapsulation (paragraph 0215, Figure 25, wherein a packet containing L2TP is encapsulated with a PPP or Ethernet header). Examiner notes that point-to-point protocol (PPP) and Ethernet are known in the art as an implementation of "Layer 2" of the OSI 7-layer Interconnect Model (i.e., the data link layer). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Layer 2 encapsulation disclosed in Oguchi with the Layer-3 marking disclosed in McDysan in order to find virtual routers on edge routers belonging to the same VPN so that the virtual routers belonging to the same VPN can be mutually connected with tunnels (such as the L2TP tunnel or the IPsec tunnel) in case routing information is exchanged between the virtual routers belonging to the same VPN (see paragraph 0085 of Oguchi).

Regarding Claim 2, McDysan discloses marking the packets using a unique protocol identifier (paragraphs 0037 and 0042, wherein packets are marked with a three bit differentiated services code point (DSCP) value (e.g., 000, 010, and 101).

Regarding Claim 4, McDysan discloses applying interface groups to determine when marking of control packets is to be done (Figure 5 and paragraph 0036, wherein the classifier in the LAN port determines by reference to a classifier table indexed by multiple indices, such as source port and destination port, to determine an interface for communication and to send values to a packet marker).

Regarding Claim 17, while McDysan marking a packet using a DSCP value (paragraphs 0037 and 0042), using Layer 2 Tunneling Protocol (L2TP) to implement a virtual private network (VPN) tunnel (paragraphs 0046 and 0047), and determination of a trusted CPE (paragraph 0042), McDysan does not disclose encapsulating the packets according to control encapsulation. In the same field of endeavor, Oguchi discloses encapsulating an L2TP VPN packet comprising Layer 3 encapsulation (paragraph 0215, Figure 25, wherein a packet containing an IP header). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the control encapsulation disclosed in Oguchi with the Layer-3 marking disclosed in McDysan in order to find virtual routers on edge routers belonging to the same VPN so that the virtual routers belonging to the same VPN can be mutually connected with tunnels (such as the L2TP tunnel or the IPsec tunnel) in case routing information is exchanged between the virtual routers belonging to the same VPN (see paragraph 0085 of Oguchi).

Regarding Claim 20, McDysan discloses an apparatus comprising a network element (Figure 5, CPE edge router 34 comprising LAN physical ports (60a-60n) and WAN physical ports 64a-64n that further comprise packet classifiers 80 (LAN) and 100 (WAN)) that marks packets carrying Layer-3 control information (paragraphs 0037 and 0042, wherein packets are marked with a differentiated services code point (DSCP) value). Examiner notes that DSCP is utilized in Internet Protocol (IP) (see paragraph 0010 of McDysan, which states "Diffserv enables an ingress boundary router to provide the QoS to aggregated flows simply by examining and/or marking each IP packet's header"), which is known in the art as an implementation of "Layer-3" in the OSI 7-layer Interconnect Model (i.e., the network layer). While McDysan discloses using Layer 2 Tunneling Protocol (L2TP) to implement a virtual private network (VPN) tunnel (paragraphs 0046 and 0047) and determination of a trusted CPE (paragraph 0042), McDysan does not disclose encapsulating the packets at Layer-2 to uniquely identify Layer-2 frames as carrying trusted control information. In the same field of endeavor, Oguchi discloses encapsulating an L2TP VPN packet comprising Layer-2 encapsulation (paragraph 0215, Figure 25, wherein a packet containing L2TP is encapsulated with a PPP or Ethernet header). Examiner notes that point-to-point protocol (PPP) and Ethernet are known in the art as an implementation of "Layer 2" of the OSI 7-layer Interconnect Model (i.e., the data link layer). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Layer 2 encapsulation disclosed in Oguchi with the Layer-3 marking disclosed in McDysan in order to find virtual routers on edge routers belonging to the same VPN so that the virtual routers belonging to the same VPN can be mutually connected with tunnels (such as the L2TP tunnel or

the IPsec tunnel) in case routing information is exchanged between the virtual routers belonging to the same VPN (see paragraph 0085 of Oguchi).

Regarding Claim 21, McDysan discloses marking the packets using a unique protocol identifier (paragraphs 0037 and 0042, wherein packets are marked with a three bit differentiated services code point (DSCP) value (e.g., 000, 010, and 101).

Regarding Claim 23, McDysan discloses applying interface groups to determine when marking of control packets is to be done (Figure 5 and paragraph 0036, wherein the classifier in the LAN port determines by reference to a classifier table indexed by multiple indices, such as source port and destination port, to determine an interface for communication and to send values to a packet marker).

Regarding Claim 36, while McDysan marking a packet using a DSCP value (paragraphs 0037 and 0042), using Layer 2 Tunneling Protocol (L2TP) to implement a virtual private network (VPN) tunnel (paragraphs 0046 and 0047), and determination of a trusted CPE (paragraph 0042), McDysan does not disclose encapsulating the packets according to control encapsulation. In the same field of endeavor, Oguchi discloses encapsulating an L2TP VPN packet comprising Layer 3 encapsulation (paragraph 0215, Figure 25, wherein a packet containing an IP header). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the control encapsulation disclosed in Oguchi with the Layer-3 marking disclosed in McDysan in order to find virtual routers on edge routers belonging to the same VPN so that the virtual routers belonging to the same VPN can be mutually connected with tunnels (such as the L2TP tunnel or the IPsec tunnel) in case routing information

is exchanged between the virtual routers belonging to the same VPN (see paragraph 0085 of Oguchi).

Claims 3 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi as applied to claims 1 and 20 above, and further in view of Nakamichi et al (United States Patent Application Publication US 2002/0085498 A1), hereinafter Nakamichi. The combination of McDysan and Oguchi discloses all of the limitations of Claims 1 and 20, as described above. However, the references do not expressly disclose marking the packets using a link-local MPLS label. In the same field of endeavor, Nakamichi discloses using a "link state type" field in a link state advertisement (LSA) in an MPLS network. Specifically, Nakamichi discloses a value for said field that denotes "link-local," indicating that the flooding scope is within a local (sub)network (paragraphs 0065 and 0066). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the link state advertisement disclosed in Nakamichi with the marker/policer disclosed in McDysan, as modified above, in order to allow a node in a communications network to collect traffic information and perform load sharing depending on traffic conditions.

Claims 5-12 and 24-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi as applied to claims 4 and 23 above, and further in view of Yu et al (United States Patent Application Publication US 2004/0010583 A1), hereinafter Yu.

Regarding Claims 5 and 24, the combination of McDysan and Oguchi discloses all of the limitations of Claims 4 and 23, as described above. However, the aforementioned references do not disclose applying interface groups to packet communications within a particular interface group. In the same field of endeavor, Yu discloses packet communications within a particular

interface group (Figure 1, interface group defined between interfaces 'a' and 'd' within network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 6 and 25, Yu further discloses interface groups assigned to backbone interfaces (Figure 4, static tunnel through Internet between network device A and network device B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 7 and 26, Yu further discloses interface groups assigned to interfaces with customer-specific interface groups (Figure 4, interface 'a' between network device A and Host PC). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 8 and 27, Yu further discloses applying interface groups to peer interfaces (Figure 4, static tunnel between network device A and network device D). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking

disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 9 and 28, Yu further discloses applying interface groups to packet communications between interface groups (Figure 4, connections between peer, backbone, and customer networks at network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 10 and 29, Yu further discloses applying interface groups to packet communications between backbone and customer-specific interface groups (Figure 4, connections between peer, backbone, and customer networks at network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 11 and 30, Yu further discloses applying interface groups to packet communications between customer-specific and peer interface groups (Figure 4, connections between peer, backbone, and customer networks at network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in

McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 12 and 31, Yu further discloses applying interface groups to packet communications between backbone and peer interface groups (Figure 4, connections between peer, backbone, and customer networks at network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Claims 13 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi, as applied to claims 4 and 23 above, and further in view of Holden et al (United States Patent 5,802,178), hereinafter Holden. The combination of McDysan and Oguchi discloses all of the limitations of Claims 4 and 23, as described above. However, the aforementioned references do not expressly disclose applying interface groups to communication of ICMP packets. In the same field of endeavor, Holden discloses a secure network interface unit (SNIU) that marks the protocol and type fields to indicate an ICMP Echo Reply, signs the packet, and sends through an interface (column 20, line 66 - column 21, line 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the ICMP marking disclosed in Holden with the interface group determination disclosed in McDysan, as modified above, in order to provide security assurances for computers operating in secure and non-secure networks (see column 2, lines 56-59 of Holden).

Claims 14 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi, as applied to claims 4 and 23 above, and further in view of Pan et al (United States Patent 7,336,615), hereinafter Pan. The combination of McDysan and Oguchi discloses all of the limitations of Claims 4 and 23, as described above. However, the aforementioned references do not expressly disclose applying interface groups to communication of ping packets. In the same field of endeavor, Pan discloses assigning predetermined port numbers to LSP ping messages (column 14, lines 48-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine ping message port assignment disclosed in Pan with the marker/policer disclosed in McDysan, as modified above, in order to automatically detect the status of a label switched path.

Claims 15 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi, as applied to claims 4 and 23 above, and further in view of Fotedar (United States Patent Application Publication US 2004/0085965 A1). The combination of McDysan and Oguchi discloses all of the limitations of Claims 4 and 23, as described above. However, the aforementioned references do not expressly disclose applying interface groups to communication of traceroute packets. In the same field of endeavor, Fotedar discloses assignment of traceroute packets to a virtual router address indicative of a loopback interface (paragraph 0011). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the traceroute packet assignment disclosed in Fotedar with the marker/policer disclosed in McDysan, as modified above, in order to enable direct communications between a virtual router and a virtual address, without having to know a physical address.

Claims 16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi as applied to claims 4 and 23 above, and further in view of Tuomenoksa et al (United States Patent Application Publication US 2002/0023210 A1), hereinafter Tuomenoksa. The combination of McDysan and Oguchi discloses all of the limitations of Claims 4 and 23, as described above. However, the references do not expressly applying interface groups to communication of packet from Network Operations Center (NOC) hosts. In the same field of endeavor, Tuomenoksa discloses setting up a tunnel interface with a NOC (paragraph 0136) and communicating packets, including control information, with the NOC via the tunnel (paragraphs 0141-0143). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the tunneling disclosed in Tuomenoksa with the interface grouping disclosed in McDysan, as modified above, in order to establish virtual private networks using nonproprietary hardware on local and wide area networks (see paragraphs 0016 and 0017 of Tuomenoksa).

Claims 18 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi as applied to claims 1 and 20 above, and further in view of Johansson (United States Patent 6,061,330). The combination of McDysan and Oguchi discloses all of the limitations of Claims 1 and 20, as described above. However, the references do not expressly disclose receiving unmarked control packets using rate-limited queues. In the same field of endeavor, Johansson discloses an ATM switch receiving packets into rate-limited queues (Figure 1, 116; Figure 4a, 410). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the rate-limited queuing disclosed in Johansson with the unmarked control packets (i.e., packets received prior to being marked) disclosed in

McDysan, as modified above, in order to perform fair queuing scheduling using both buffer occupancy and input rate.

Claims 19 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Oguchi, as applied to claims 1 and 20 above, and further in view of Hussey et al (United States Patent Application Publication US 2001/0049744 A1), hereinafter Hussey. The combination of McDysan and Oguchi discloses all of the limitations of Claims 1 and 20, as described above. Further, McDysan discloses receiving packets (paragraphs 0037 and 0042). However, the aforementioned references do not expressly disclose processing the received packets at a line rate. In the same field of endeavor, Hussey discloses a processor pool aggregation technique wherein a received packet data stream is capable of being processed at a line rate (paragraph 0050). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the packet processing disclosed in Hussey with the marker/policer disclosed in McDysan, as modified above, in order to improve data processing within a data-handling device.

(10) Response to Argument

Appellant's arguments regarding rejection of Claims 1-38 under 35 U.S.C. 103(a) have been considered but are not persuasive.

Regarding Claims 1 and 20, Appellant states "the cited portions of the cited references appear to disclose or suggest "marking packets carrying Layer-3 control information" and further states that "Examiner's allegation of "which is known in the art as implementation of 'Layer-3' in the OSI 7-layer Interconnect Model" does not appear to allege teaching as to, for example,

"Layer-3 control information." Examiner respectfully disagrees. Examiner notes that Appellant has not specifically pointed out how the language of the claims patentably distinguishes them from the references. Examiner turns to Appellant's specification at paragraph 0004, which defines the OSI 7-layer model. More specifically, the network layer is defined as Layer-3. Examiner further turns to The OSI Reference Model, which was provided to Appellant with the Office Action mailed June 5, 2009, wherein Layer-3 (i.e., the Network Layer) corresponds to the Internet Protocol (IP). Turning to the McDysan reference, paragraph 0009 recites: "Diffserv is an IP QoS architecture that achieves scalability by conveying an aggregate traffic classification within a DS field (e.g., the IPv4 Type of Service (TOS) byte or IPv6 traffic class byte) of each IP-layer packet header. The first six bits of the DS field encode a Diffserv Code Point (DSCP) that requests a specific class of service or Per Hop Behavior (PHB) for the packet at each node along its path within a Diffserv domain." Examiner further notes that the claimed "control information" is not further defined in the claim language so as to require a structure or feature of said information other than being "Layer-3 control information." As the DSCP marking disclosed in McDysan controls the QoS applied to a packet (e.g., in paragraphs 0037 and 0042) and further is indicative of an IP QoS (i.e., Layer-3), Examiner submits that the claim limitation "Layer-3 control information" is met by the disclosure of McDysan. Appellant further states paragraph 0042 of McDysan "fails to disclose or suggest, and teaches away from "marking packets carrying the Layer-3 control information." Examiner respectfully disagrees. Examiner notes that while alleging that the disclosure of McDysan teaches away from marking packets, Appellant has not specifically pointed out how the disclosure teaches away or how the language of the claims patentably distinguishes them from the references. As described above, McDysan

discloses marking packets via a DSCP code point in IP packets, and therefore meets the claim limitation "marking packets carrying the Layer-3 control information." Appellant further states that "Examiner has not alleged teaching to "...encapsulating the packets at Layer-2 to uniquely identify Layer-2 frames as carrying trusted control information." Examiner respectfully disagrees. Examiner notes that the claim language is silent as to how the "Layer-2 frames" are encapsulated such that the claimed "unique identify(ication)" is achieved. As such, Examiner submits that the claim language "to uniquely identify Layer-2 frames as carrying trusted control information" simply expresses the intended result of the "encapsulation" step positively recited. Examiner again turns to Appellant's specification at paragraph 0004, which defines the OSI 7-layer model. More specifically, the Data Link layer is defined as Layer-2. Examiner further turns to The OSI Reference Model, which was provided to Appellant with the Office Action mailed June 5, 2009, wherein Layer-2 (i.e., the Data Link Layer) is responsible for providing Ethernet service and corresponds to the PPP protocol. Oguchi discloses encapsulating an L2TP VPN packet comprising Layer-2 encapsulation (paragraph 0215, Figure 25, wherein a packet containing L2TP is encapsulated with a PPP or Ethernet header). As shown by the OSI reference model, Examiner notes that point-to-point protocol (PPP) and Ethernet are known in the art as an implementation of "Layer 2" of the OSI 7-layer Interconnect Model (i.e., the data link layer). As the claim language is silent as to the format of the encapsulation or how the encapsulation would be performed in order to achieve the claimed result, Examiner submits that the Layer-2 encapsulation disclosed in Oguchi reads on the claim limitation "...encapsulating the packets at Layer-2 to uniquely identify Layer-2 frames as carrying trusted control information." Appellant further states that "the Examiner's proposition as to allegedly establishing obviousness must be

understood in the context of case law and Office practice that recognizes that evidence of "teaching away" undermines such as allegation of obviousness." However, Examiner respectfully notes that Appellant has merely alleged that the disclosure of McDysan teaches away from "marking packets carrying the Layer-3 control information" (see page 22 of the Appeal Brief filed July 25, 2011) and has not presented any evidence as to how McDysan teaches away from the claim limitation. Appellant further states that "Examiner has not provided a plausible rationale as to why the prior art references would have worked together to render the claims obvious" and further states "the Examiner's alleged motivation is not looking only at the problem Appellant was trying to solve, which Appellant argues is inconsistent with *KSR Int'l Co v. Teleflex, Inc.*" Examiner respectfully disagrees. Per MPEP 2143.01: "The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts." Examiner submits that as McDysan and Oguchi are both directed to the formatting and transmission of VPN traffic, the references are analogous art. As such, Examiner submits that the combination of the Layer-3 control packet marking disclosed in McDysan and the L2TP encapsulation disclosed in Oguchi, whereby the encapsulation identifies the packet as a tunneled (i.e., trusted) packet, reads on the broadest reasonable interpretation of "marking packets carrying the Layer-3 control information" and "...encapsulating the packets at Layer-2 to uniquely identify Layer-2 frames as carrying trusted control information." In response to Appellant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some

teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.,* 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Oguchi provides an explicit motivation for combining or modifying the teachings of the prior art to produce the claimed invention, establishing a need in the art to discover virtual routers within a network and establish a virtual private network by simplifying the settings to accomplish the same (see paragraph 0085).

Regarding Claims 2 and 21, Appellant states "Examiner does not explain how the Examiner considers "a three bit differentiated services code point value…to be a "unique protocol identifier." Examiner respectfully disagrees. Examiner notes that the DSCP value disclosed in McDysan uniquely identifies how the packet is to be treated (e.g., binary value of 000 indicating the packet is to be treated as best-effort in paragraph 0042) and further notes that the "unique protocol identifier" is not further limited in the claim language so as to require a specific format or structure.

Regarding Claims 4 and 23, Appellant states "the alleged teaching of "to send values to a packet marker" does not teach or suggest "…to determine when marking of control packets is to be done." Examiner respectfully disagrees. Examiner notes that Appellant has not specifically pointed out how the language of the claims patentably distinguishes them from the references. McDysan, at Figure 5 and paragraph 0036, discloses a classifier in the LAN port determining, via by reference to a classifier table indexed by multiple indices (e.g., source port and destination port), to determine an interface for communication and to send values to a packet

marker. Further, at paragraphs 0037 and 0042, a determination is made with regard to marking of a packet (e.g., marking a packet when received from an access network). As the DSCP marking disclosed in McDysan controls the QoS applied to a packet (e.g., in paragraphs 0037 and 0042) and further is indicative of an IP QoS (i.e., Layer-3), Examiner submits that the claim limitation "marking of a control packet" is met by the disclosure of McDysan.

Regarding Claims 17 and 36, Appellant states "the cited portions of the cited reference do not appear to disclose, as an example, according to control encapsulation." Examiner respectfully disagrees. Examiner notes that Appellant has not specifically pointed out how the language of the claims patentably distinguishes them from the references. Further, Examiner notes that the claimed "control encapsulation" is not further defined in the claim language so as to require a certain format for the encapsulation. As such, Examiner gives the claim language its broadest reasonable interpretation without unnecessarily importing limitations from the specification. Oguchi discloses encapsulating an L2TP VPN packet (i.e., performing control encapsulation) comprising Layer 3 encapsulation (paragraph 0215, Figure 25, wherein a packet containing an IP header).

Regarding Claims 3 and 22, Appellant states ""to allow a node in a communications network to collect traffic information and perform load sharing depending on traffic conditions"...would not have motivated one of ordinary skill in the art to combine the alleged teachings of the cited portions of the cited references." Examiner respectfully disagrees. Examiner submits recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Nakamichi discloses, at paragraph 0012, a need to allow a node in a communication network to collect traffic information to thereby achieve load sharing depending on the conditions of the traffic. Therefore, Examiner notes that the references themselves provide a motivation to combine the disclosed teachings.

Regarding Claims 5 and 24, Appellant states that "the cited portion of the Yu references does not teach or suggest "applying interface groups to determine when marking of control packets is to be done," comprise "applying interface groups to packet communications within a particular interface group," as Appellant submits instructing devices to assume mastership of a virtual IP address teaches away from "applying interface groups to determine when marking of control packets is to be done." Examiner notes that the claim language is not further defined so as to further limit the step of applying interface groups or the features of a particular interface group. In determining the broadest reasonable interpretation of the claimed "applying interface groups," Examiner turns to paragraphs 0019-0025 of Appellant's specification. However, in looking to the cited paragraphs, Appellant's specification does not provide any further specificity to the act of "applying interface groups," aside from describing "a new concept of "interface groups, whereby a router can determine whether a packet should be marked or not" (see paragraph 0025 of Appellant's specification). As shown by the disclosure, "determining whether a packet should be marked or not" is a result of the "concept of interface groups," but the actual process of "applying interface groups" is not described. Further, as claimed, Examiner submits

the result of "to determine when marking of control packets is to be done" simply expresses the intended result of the "applying interface groups" step positively recited and there is no further description in the specification or the claim language of how "applying interface groups" leads to such a determination. Per MPEP 2106: "USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted "in view of the specification" without importing limitations from the specification into the claims unnecessarily). *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See also *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320,1322 (Fed. Cir. 1989)." Examiner has given said claim language its broadest reasonable interpretation in view of the specification to comprise determination of an interface for communications. Accordingly, Yu discloses assigning interfaces to communicate within and between various types of networks (see Figures 1 and 4 and paragraphs 0022 and 0025). In combination with the packet marking determination disclosed in McDysan (paragraphs 0037 and 0042, wherein the type of marking for a packet is determined), Examiner submits that the combination of McDysan, Oguchi, and Yu renders the claim limitation "applying interface groups to determine when marking of control packets is to be done." Appellant further states "Examiner has not shown how an alleged motivation of "to withstand failures of network device components, without triggering unnecessary failover in a network device" would have motivated one of ordinary skill in the art to combine the teachings of Yu, directed to a method and apparatus for defining failover events in a network device, with

the teachings of McDysan, directed to a VPN-aware CPE edge router, and the teachings of Oguchi, directed to the establishment of virtual links between all of the relaying apparatuses belonging to a multicast address group, to allegedly yield applying interface groups to packet communications within a particular interface group to determine when marking of control packets is to be done." In response to Appellant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.,* 550 U.S. 398, 82 USPQ2d 1385 (2007). In the instant case, Yu explicitly states a need in the art to withstand failover events in a network by defining which events should and should not trigger a failover in the network device (see paragraphs 0012-0013 of Yu). Therefore, Examiner notes that the references themselves provide a motivation to combine the disclosed teachings.

Regarding Claims 6 and 25, Appellant states that "Examiner parenthetically characterizes "the Internet" as teaching "(i.e., backbone)," without citing any reference or providing any justification or explanation as to such characterization." Examiner respectfully disagrees. Examiner notes that the claim term "backbone interface group" is not further defined in the claim language so as to require any specific characteristics of the interface group. As such, Examiner gives the claim language a broadest reasonable interpretation of interfaces connected via a backbone network. Yu discloses setting up a tunnel between interface 'd' of

Network Device A and interface 'e' of Network Device B, which are remotely located from one another, via the Internet (paragraph 0033). As such, Examiner submits that the "Internet" disclosed in Yu reads on the broadest reasonable interpretation of the claimed "backbone." Appellant further states "the block diagram of Figure 4 of the Yu et al. reference does not disclose or suggest, as an example, "...the step of: applying interface groups to packet communications within a backbone interface group." Examiner respectfully disagrees. Figure 4 of Yu discloses setting up a static tunnel (i.e., "Static Tunnel A") across the Internet (i.e., backbone) between two network devices. Given its broadest reasonable interpretation, the claimed "backbone interface group" limitation is met by interface 'd', which connects Network Device A to the tunnel over the Internet.

Regarding Claims 7 and 26, Appellant states "Examiner does not appear to allege teaching as to "applying interface groups to packet communications within a customer-specific interface group." Examiner notes that the claim term "customer-specific interface group" is not further defined in the claim language so as to require any specific characteristics of the interface group. As such, Examiner gives the claim language a broadest reasonable interpretation of interfaces connecting to a customer. As stated in the Office Action mailed September 8, 2010, Yu discloses communications with assigning interface 'a' to interconnect with a Host PC (i.e., applying interface groups to packet communications within customer-specific interface group given its broadest reasonable interpretation) in Figure 4. Appellant further states the cited portions of the cited references do not disclose or suggest "wherein the step of applying interface groups to packet communications within a particular interface group further comprises the step of: applying interface groups to packet communications within a customer-specific interface

group." However, Examiner notes that Appellant solely alleges that the claim language is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 8 and 27, Appellant states that "Figure 4 of the Yu reference does not disclose or suggest "communications via a static tunnel between Network Device A and Network Device D (i.e., peer devices given its broadest reasonable interpretation) via interface 'a' on Network Device A," as alleged by Examiner. Examiner respectfully disagrees. Figure 4 clearly shows two network devices (Network Device A and Network Device D) connected to one another via a static tunnel. Setting up the static tunnel shown in Figure 4 is described further in paragraph 0046. Examiner notes that the claim term "peer interface group" is not further defined in the claim language so as to require any specific characteristics of the interface group. As such, Examiner gives the claim language a broadest reasonable interpretation of interfaces connecting to peer devices. Given its broadest reasonable interpretation, the claimed "peer interface group" limitation is met by the disclosed interface assignment (i.e., interface 'd') used in order to communicate between like devices (i.e., Network Device A and Network Device D). Appellant further states the cited portions of the cited references do not disclose or suggest "wherein the step of applying interface groups to packet communications within a particular interface group further comprises the step of: applying interface groups to packet communications within a peer interface group." However, Examiner notes that Appellant solely alleges that the claim language is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 9 and 28, Appellant states "the Yu reference appears to teach away from the Examiner's assertion that "Examiner has given the claim language "applying interface groups" its broadest reasonable interpretation in view of the specification to comprise determination of an interface for communications" and "one of ordinary skill in the art at the time the invention was made, in view of the Yu, reference, would not have understood "...define an interface group..." to merely mean "determination of an interface for communications, as alleged by Examiner." Examiner notes that Appellant specification broadly describes interface groups at paragraph 0026: "The second is to apply a new concept of interface groups, whereby a router can determine whether a packet should be marked or not." However, the step of applying interface groups is not discussed in Appellant's specification and not further defined in the claim language. Therefore, absent any definition of the term in the specification, Examiner submits that a broadest reasonable interpretation of the claim term "applying interface groups" to reasonably encompass any interpretation of the plain meaning of "applying interface groups," such as determining the interfaces assigned to particular interface types disclosed in Yu. Further, Examiner notes that Appellant solely alleges that the claim language (i.e., the step of applying interface groups) is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 10 and 29, Appellant states that "Figure 4 of the Yu reference does not disclose "applying interface groups to packet communications between backbone and customer-specific groups (Figure 4, connections between backbone (e.g., in Network Device A between interfaces 'a' and 'd' and customer networks (e.g., between Network Device A at interface 'a' and Host PC 12)." Appellant further states that "Yu teaches away from "applying

interface groups" to connections between backbone....and customer networks...as Appellant submits such an alleged "applying interface groups" would appear to render inoperable the "tunnel failover...without running a dynamic routing protocol" described in paragraph [0034] of the Yu reference." However, Examiner notes that Appellant has provided no evidence that the disclosure of defining interfaces between a backbone network and a customer network, such as that disclosed in Yu, would render a failover inoperable. Further, Examiner notes that Appellant has not described how an interpretation of the claim term "applying interface groups," which is not defined in the specification as described above, would lead to such a conclusion. Further, Appellant states that "the cited portions of the cited references do not disclose wherein the step of applying interface groups to packet communications between interface groups further comprises the step of: applying interface groups to packet communications backbone and customer-specific interface groups." However, Examiner notes that Appellant solely alleges that the claim language (i.e., the step of applying interface groups) is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 11 and 30, Appellant states that "Figure 4 of the Yu reference does not disclose "applying interface groups to packet communications between customer-specific and peer interface groups (Figure 4, connections between peer (e.g., between Network Device A and Network Device D) and customer networks (e.g., between Network Device A at interface 'a' and Host PC 12)." Appellant further states that "Yu teaches away from "applying interface groups" to connections between peer....and customer networks...as Appellant submits such an alleged "applying interface groups" would appear to render inoperable the "tunnel

failover…without running a dynamic routing protocol" described in paragraph [0034] of the Yu reference." However, Examiner notes that Appellant has provided no evidence that the disclosure of defining interfaces between a backbone network and a customer network, such as that disclosed in Yu, would render a failover inoperable. Further, Examiner notes that Appellant has not described how an interpretation of the claim term "applying interface groups," which is not defined in the specification as described above, would lead to such a conclusion. Further, Appellant states that "the cited portions of the cited references do not disclose wherein the step of applying interface groups to packet communications between interface groups further comprises the step of: applying interface groups to packet communications customer-specific and peer interface groups." However, Examiner notes that Appellant solely alleges that the claim language (i.e., the step of applying interface groups) is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 12 and 31, Appellant states that "Examiner parenthetically characterizes "the Internet" as teaching "(i.e., backbone)," without citing any reference or providing any justification or explanation as to such characterization." Examiner respectfully disagrees. Examiner notes that the claim term "backbone interface group" is not further defined in the claim language so as to require any specific characteristics of the interface group. As such, Examiner gives the claim language a broadest reasonable interpretation of interfaces connected via a backbone network. Yu discloses setting up a tunnel between interface 'd' of Network Device A and interface 'e' of Network Device B, which are remotely located from one another, via the Internet (paragraph 0033). As such, Examiner submits that the "Internet"

disclosed in Yu reads on the broadest reasonable interpretation of the claimed "backbone" and that the interface 'd' in Network Device A belongs to a "backbone interface group." Appellant further states that citing Network Device A between interfaces 'a' and 'd' as "teaching a "backbone" is "inconsistent and contradictory." Examiner respectfully disagrees. Figure 4 of Yu shows that Interface 'd' of Network Device A is connected to the Internet, which Examiner has established as teaching "backbone." Therefore, the disclosure of applying interface groups to packet communications between peer interface groups (e.g., between Network Device A and Network Device D) and backbone (e.g., in Network Device A between interfaces 'a' (to a LAN) and 'd' (to the Internet)) reads on the broadest interpretation of the claimed "applying interface groups between backbone and peer interface groups." Further, Appellant states that "the cited portions of the cited references do not disclose wherein the step of applying interface groups to packet communications between interface groups further comprises the step of: applying interface groups to packet communications backbone and peer interface groups." However, Examiner notes that Appellant solely alleges that the claim language (i.e., the step of applying interface groups) is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 13 and 32, Appellant states "Examiner appears to characterize the teachings of Holden in a manner that teaches away from the subject matter of claims 13 and 32." Appellant further states "claims 13 and 32 depend indirectly from claims 1 and 20, which recite "marking packets carrying the Layer-3 control information," while the Examiner alleges teaching as to marking "an ICMP Echo Reply." Examiner respectfully disagrees. Examiner notes that the claim language in claims 13 and 32 requires "applying interface groups to communication of

ICMP packets." While McDysan is relied on disclose applying interface groups to determine when marking of control packets is to be done (Figure 5 and paragraph 0036, wherein the classifier in the LAN port determines by reference to a classifier table indexed by multiple indices, such as source port and destination port, to determine an interface for communication and to send values to a packet marker), as claimed in parent claims 4 and 23, Holden discloses a secure network interface unit (SNIU) that marks the protocol and type fields to indicate an ICMP Echo Reply, signs the packet, and sends through an interface (column 20, line 66 - column 21, line 10). Per MPEP 2143.01: "The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts." As such, Examiner submits that the combination of the packet marking based on source and destination port identifiers disclosed in McDysan, the encapsulation disclosed in Oguchi, and the ICMP Echo packet processing disclosed in Holden discloses the claim limitation "applying interface groups to communication of ICMP packets."

Regarding Claims 14 and 33, Appellant states "assigning predetermined port numbers to LSP ping messages" fails to disclose or suggest applying interface groups to determine when marking of control packets is to be done, wherein applying interface groups to determine when marking of control packets is to be done comprises applying interface groups to communication of ping packets, and marking packets carrying Layer-3 control information, as "assigning predetermined port numbers to LSP ping messages" does not teach or suggest "to determine when marking of control packets is to be done." Examiner notes that McDysan is relied on disclose applying interface groups to determine when marking of control packets is to be done

(Figure 5 and paragraph 0036, wherein the classifier in the LAN port determines by reference to a classifier table indexed by multiple indices, such as source port and destination port, to determine an interface for communication and to send values to a packet marker), as claimed in parent claims 4 and 23. However, Examiner notes that Appellant solely alleges that the claim language (i.e., "applying interface groups to ping packets") is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 15 and 34, Appellant states "assignment of traceroute packets to a virtual router address indicative of a loopback interface" fails to disclose or suggest applying interface groups to determine when marking of control packets is to be done, wherein applying interface groups to determine when marking of control packets is to be done comprises applying interface groups to communication of traceroute packets, and marking packets carrying Layer-3 control information, as "assignment of traceroute packets to a virtual router address indicative of a loopback interface" does not teach or suggest "to determine when marking of control packets is to be done." Examiner notes that McDysan is relied on disclose applying interface groups to determine when marking of control packets is to be done (Figure 5 and paragraph 0036, wherein the classifier in the LAN port determines by reference to a classifier table indexed by multiple indices, such as source port and destination port, to determine an interface for communication and to send values to a packet marker), as claimed in parent claims 4 and 23. However, Examiner notes that Appellant solely alleges that the claim language (i.e., "applying interface groups to traceroute packets") is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 16 and 35, Appellant states "setting up a tunnel interface with a NOC (paragraph 0136) and communicating packets, including control information, with the NOC via the tunnel (paragraphs 0141- 0143)" fails to disclose or suggest applying interface groups to determine when marking of control packets is to be done, wherein applying interface groups to determine when marking of control packets is to be done comprises applying interface groups to communication of packets from Network Operations Center (NOC) hosts, and marking packets carrying Layer-3 control information, as "setting up a tunnel interface with a NOC (paragraph 0136) and communicating packets, including control information, with the NOC via the tunnel (paragraphs 0141-0143)" does not teach or suggest "to determine when marking of control packets is to be done." Appellant further states "setting up a tunnel interface with a NOC" does not disclose or suggest "applying interface groups to communication of packets from Network Operations Center (NOC) hosts." However, Examiner notes that Appellant solely alleges that the claim language (i.e., "applying interface groups to communication of packets from NOC hosts") is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art.

Regarding Claims 18 and 37, Appellant states "the Examiner does not appear to allege any teaching or suggestion as to, for example, "unmarked control packets." Rather, Appellant notes, with respect to claims 1 and 20, from which claims 18 and 37 depend, the Examiner alleges "...McDysan discloses marking packets via a DSCP code point in IP packet .... " Thus, Appellant submits the combination of references cited by the Examiner appear to teach away from "unmarked control packets." Moreover, Appellant submits the "cells" of Johansson fail to disclose or suggest "unmarked control packets." Appellant states that the cited portions of the

cited references do not disclose "control packets." Examiner respectfully disagrees. The claim language "control packets" is not further defined in the claim language so as to further limit the content or structure of the claimed "control packet." As such, Examiner has given the claim term its broadest reasonable interpretation without unnecessarily importing limitations from the specification and interpreted "control packet" to comprise any messaging related to control of communications (e.g., setup, teardown, parameter management, etc.). Further, per MPEP 2143.01: "The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts." The McDysan, Oguchi, and Johansson references are directed to processing data packets and are therefore in analogous arts." While McDysan discloses processing control information in a network (paragraphs 0037 and 0042), the combination of McDysan and Oguchi does not disclose processing the control packets at a line rate. In the same field of endeavor, Figure 4a, step 410 of Johansson "determines when a predetermined number Input RateLimit of Cells are received" (column 10, lines 45-47), wherein the cells contain basic ATM functions such as VPI/VCI translation and payload type indicator operations (i.e., the cells are unmarked). As such, Johansson provides a general teaching of a rate-limited queue receiving unmarked control packets.

Regarding Claims 19 and 38, Appellant states "the cited portions of the cited references do not disclose or suggest "receiving the packets as received packets; and processing the received packets at a line rate." While the Examiner cites "(paragraph 0050)" of the Hussey reference, Appellant submits "(paragraph 0050)" of the Hussey reference states, in part, "...receives a packet data stream via the communication network 110 at a line rate .... " Appellant

submits such teaching does not disclose or suggest "receiving the packets as received packets" and "processing the received packets at a line rate."" However, Examiner notes that Appellant solely alleges that the claim language (i.e., "receiving the packets as received packets" and "processing the received packets at a line rate") is not disclosed or suggested in the prior art and does not particular point how the claims are patentably distinguishable from the prior art. Appellant states "even if an attempt were made to combine the teachings of the Hussey reference and the McDysan reference, such an attempted combination would not yield the subject matter of Claims 19 and 38." Per MPEP 2143.01: "The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts." The McDysan, Oguchi, and Hussey references are directed to processing data packets and are therefore in analogous arts. Further, Hussey discloses a processor pool aggregation technique wherein a communication device "receives a packet data stream via the communication network…at a line rate that might otherwise overwhelm the processing capabilities of the NIC…and result in dropped packets and reduced quality of service" (paragraph 0050).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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